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Vol. 96 Washington: 1945 No. 3192

THREE NEW SCIAENID FISHES OF THE GENUS OPHIOSCION FROM THE ATLANTIC COASTS OF CENTRAL AND SOUTH AMERICA

By Leonard P. Schultz

During my studies of the sciaenid fishes of Venezuela I found a specimen of *Ophioscion* (U.S.N.M. No. 86710) from Uruguay, collected by the late Dr. Hugh M. Smith in 1922, with 28 soft rays in the dorsal fin. This count did not agree with the statements of recent authors who have reported on fishes from Panama and from the West Indies under the name of *adustus*. Although Jenyns and Agassiz each counted 28 soft dorsal rays for *adustus* from Maldonado and Montevideo, Jordan and Eigenmann in their review of the Sciaenidae (Rep. U. S. Comm. Fish and Fisheries for 1886, pt. 14, p. 403, 1889) decided that Agassiz's count was incorrect and should have been 22 or 23, or perhaps 18 or 19. Thus the species of the western Atlantic were confused in the first review and the name *adustus* has been applied to two or three Atlantic species.

This contribution discusses the relationships of the western Atlantic species of the genus *Ophioscion* and describes three new species from Panama, Venezuela, and Brazil.

Drawings of figures 6 to 8 were made by Mrs. A. M. Awl.

Genus OPHIOSCION Gill

Ophioscion Gill, Proc. Acad. Nat. Sci. Philadelphia, vol. 15, p. 165, 1863. (Type: *Ophioscion typicus* Gill, based on U.S.N.M. No. 22861, west coast of Panama.)

No attempt is made to include herein the numerous references to locality records of species of the genus *Ophioscion* from the western

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Atlantic Ocean, because this would require a study of the specimens on which such reports were based, and these specimens are not now available.

The genus *Ophioscion* is closely related to *Bairdiella* Gill and *Stellifer* Oken. Meek and Hildebrand (Marine fishes of Panama, vol. 2, p. 611, 1925) separated *Stellifer* from *Bairdiella* and *Ophioscion* in their key on the basis of the skull being "excessively cavernous, spongy to the touch." I had some difficulty separating the various species referred to these genera by this character, and so I made a dissection of the upper surfaces of the skull, removing the scales and skin, thus exposing the nature of the cavernous skull. *Bairdiella chrysura* (Lacepède), *Ophioscion typicus* Gill, and *Stellifer rastrifer* (Jordan) all have cavernous skulls dorsally, and also around the orbits occur narrow bony bridges or stays supporting the overlying skin and scales. *Stellifer* has a broader interorbital space, and thus the caverns are a little broader and by touch can be felt a trifle more easily than the slightly narrower caverns in the other two genera. My dissections indicate that the caverns are well developed in all three genera [1] and are of little value as a diagnostic character in the separation of these three genera, especially if the specimens are well hardened in preservation.

Ophioscion is said to differ from *Bairdiella* by having the lower spine of the preopercle pointing straight backward and a little downward, whereas in *Bairdiella* it is said to be hooked downward. The lower preopercular spine in these genera is so variable among the various species of *Bairdiella* and *Ophioscion* that I cast serious doubt on its usefulness as a character. None of the species of *Ophioscion* has any of the preopercular spines hooked downward. However, some individuals, especially young examples of *Bairdiella chrysura*, likewise do not have the lower preopercular spine hooked downward, although in adults of *Bairdiella* that spine is hooked downward.

I have searched for characters to separate these three genera but have found indications of overlapping, and so the following characters are not wholly satisfactory, although the genera can be separated by them when taken together:

Bairdiella, with an obliquely terminal mouth; both jaws of nearly same length; lower jaw with minute teeth in a narrow band of two or three rows forward and in a single row of slightly enlarged teeth posteriorly; the pair of small pores at tip of chin close together and lying more or less in a shallow depression (fig. 5, *b*) and the margin of the snout lacking the small lobes at each side of the median pore

[1] I removed the skin and scales from specimens representing various species usually referred to the following genera and found the dorsal part of the skull to be cavernous: *Umbrina* Cuvier; *Micropogon* Cuvier and Valenciennes; *Plagioscion* Gill; *Macrodon* Schinz; *Cynoscion* Gill; *Corvula* Jordan and Eigenmann; *Larimus* Cuvier and Valenciennes. In *Menticirrhus* Gill the caverns were much smaller than in the other genera examined.

(fig. 5, *a*); the gill rakers moderately long and slender, contained less than twice in the diameter of the eye; the first soft ray of the pelvics ending in a filament.

Stellifer, with an oblique mouth, somewhat intermediate between *Bairdiella* and *Ophioscion*, a little more inferior in position than in *Bairdiella* but not ventral in position as in *Ophioscion;* the snout projecting a very little in front of the tip of the lower jaw; lower jaw with teeth in a narrow villiform band, the inner row of which is a little enlarged; the pair of small pores near the tip of chin separated by a small bony knob (fig. 5, *d*); the margin of the snout lacking a lobe at each side of the anterior median pore near margin of snout

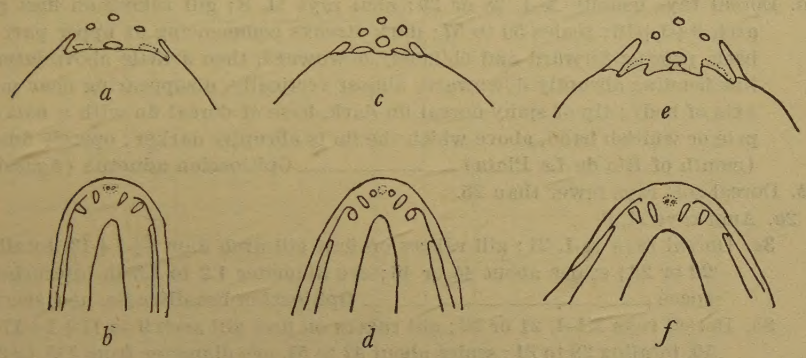

FIGURE 5.—Diagrammatic sketches of the tip of the snout and of the anterior part of the underside of the lower jaw of three species of sciaenid fishes: *a*, Snout tip of *Bairdiella chrysura* (Lacepède); *b*, lower jaw of *B. chrysura; c*, snout tip of *Stellifer rastrifer* (Jordan); *d*, lower jaw of *S. rastrifer; e*, snout tip of *Ophioscion typicus* Gill (type, U.S.N.M. No. 22861); *f*, lower jaw of *O. typicus*.

(fig. 5, *c*); the gill rakers slender and long, equal to eye or contained in it fewer than two times; the first soft ray of the pelvic fins ending in a filament.

Ophioscion, with the mouth in a somewhat ventral position, the lower jaw included and jaws nearly horizontal, with the snout projecting a little beyond the tip of the lower jaw; lower jaw with a wide band of villiform teeth, none of which is enlarged; the pair of small pores at midtip of lower jaw close together and usually lying in a shallow depression (fig. 5, *f*); the front margin of the snout bearing a short, blunt lobe each side of the anterior median pore (fig. 5, *e*); the gill rakers usually short, not slender, and contained more than 2.4 to 6 times in the eye; the first soft ray of the pelvic fins ending in a filament, usually white.

Thorugh the courtesy of Dr. Thomas Barbour, of the Museum of Comparative Zoology, I have been able to examine some of the specimens described by Jordan and Eigenmann in 1889 in their review of

the Sciaenidae. "*Stelliferus naso* Jordan," based on specimens from Cachiura, Brazil (M.C.Z. Nos. 4583 and 10808), definitely belongs to the genus *Ophioscion*. Specimens of *Stellifer microps* Steindachner (M.C.Z. Nos. 4581 and 1031), from Pará and Tonteboa, are *Ophioscion microps* (Steindachner).

Jordan and Eigenmann identified M.C.Z. No. 22417 as *Sciaena adusta* Agassiz, but my reexamination of this specimen indicates that it is *Ophioscion punctatissimus* Meek and Hildebrand.

The following key is intended to separate the species of *Ophioscion* occurring in the Atlantic along the coasts of Central and South America and in the West Indies:

1*a*. Dorsal rays usually X–I, 28 or 29; anal rays II, 8; gill rakers on first gill arch 9+1+16; scales 50 to 57; dark streaks commencing at upper part of back, passing forward and obliquely downward, then a little above lateral line bending abruptly downward, almost vertically, disappearing near mid-axis of body; tip of spiny dorsal fin dark, base of dorsal fin with a narrow pale or whitish band, above which the fin is abruptly darker; opercle dusky (mouth of Río de La Plata) ---------- Ophioscion adustus (Agassiz)

1*b*. Dorsal soft rays fewer than 25.

2*a*. Anal rays II, 9.

3*a*. Dorsal rays X–I, 21; gill rakers on first gill arch 8 or 9+1+13, totaling 22 or 23; scales about 45 or 46; eye diameter 1.2 to 1.3 in interorbital space ---------- Ophioscion brasiliensis, new species

3*b*. Dorsal rays XI–I, 21 or 22; gill rakers on first gill arch 9 to 11+1+17 to 19, totaling 28 to 31; scales about 47 to 51, eye diameter from 1½ to 2¾ times in interorbital space ------- Ophioscion microps (Steindachner)

2*b*. Anal rays II, 7 or 8.

4*a*. Scale rows above lateral line usually 51 to 57.

5*a*. Gill rakers on lower part of first gill arch usually 16 to 18 including rudiments; dorsal rays XI–I (rarely XII–I) 21 or 22; anal rays II, 8; scale rows 52 to 54; color more or less plain grayish above, paler below ---------- Ophioscion venezuelae, new species

5*b*. Gill rakers on lower part of first gill arch 11 to 13 (see table for counts).

6*a*. Dorsal rays X–I (occasionally XI–I), 22 to 24; anal rays II, 7 (rarely II, 6); gill rakers 7 or 8+1+11 to 13; scale rows above lateral line about 54 to 57.

Ophioscion punctatissimus Meek and Hildebrand

6*b*. Dorsal rays X–I, 20 or 21; anal rays II, 7 (rarely II, 8); gill rakers 7 to 9+1+13; scale rows above lateral line about 51 or 52.

Ophioscion panamensis, new species

4*b*. Scale rows above lateral line 45 to 49; anal rays II, 8; dorsal rays XI–I, 21; gill rakers 8 or 9+1+14 or 15; scales 46 to 49; eye diameter 1.0 to 1.1 in interorbital space ---------- Ophioscion naso (Jordan)

OPHIOSCION ADUSTUS (Agassiz)

Corvina adusta Agassiz, *in* Spix and Agassiz, Selecta genera et species . . . Brasiliam . . ., p. 126, 1831 (Atlantic Ocean off Brazil).—Jenyns, The zoology of the voyage of H. M. S. *Beagle*, pt. 4, Fishes, p. 42, 1842 (Maldonado and Montevideo).

Ophioscion adustus Tortonese, Boll. Mus. Zool. Anat. Comp. Univ. Torino, ser. 3, vol. 47, No. 100, p. 130, 1939 (Rio de Janeiro and Montevideo).

TABLE 1.—*Counts made on species of* Ophioscion *from the Atlantic coasts of Central and South America*

Species	Dorsal													Anal rays				Gill rakers on first gill arch														
	Spines			Soft rays														Above angle					At angle	Below angle								
	X-I	XI-I	XII-I	19	20	21	22	23	24	25	26	27	28	II, 6	II, 7	II, 8	II, 9	7	8	9	10	11	1	11	12	13	14	15	16	17	18	19
adustus [1]	2												3			2				1			1						1			
punctatissimus [2]	7	2					2	5	2					1	8			2	3				5	1	3	1						
venezuelae		6	1			5	2									7				2	3		5						3		2	
panamensis [3]	11				5	6									8	1		2	2	1			5			5						
brasiliensis [4]	2					2											2		1	1			2			2						
naso [5]		6				6										6			5	1			6				3	3				
microps [6]		5		1		3	1										5			2	1	2	5							1	3	1

Species	Number of vertical scale rows above lateral line														Total gill rakers on first gill arch											
	45	46	47	48	49	50	51	52	53	54	55	56	57	58	20	21	22	23	24	25	26	27	28	29	30	31
adustus [1]											1		1								1					
punctatissimus [2]										3	1	1	2	1	4	2										
venezuelae								2	1	1											2	1		2		
panamensis [3]							2	2								2	2	1								
brasiliensis [4]	1	1															1	1								
naso [5]		2	3		1													3	2	1						
microps [6]			1		2		2																2	2		1

[1] Counts recorded from U.S.N.M. No. 86710 and from Jenyns's and Agassiz's descriptions.
[2] Counts recorded from U.S.N.M. Nos. 81766 (holotype), 80765 and 80766 (paratypes), 50161, 126188, 104297; M.C.Z. No. 22417.
[3] Counts recorded from U.S.N.M. Nos. 81204 to 81207.
[4] Counts recorded from U.S.N.M. No. 87742 and 122611.
[5] Counts recorded from M.C.Z. Nos. 4583 and 10808.
[6] Counts recorded from M.C.Z. Nos. 1031 and 4581.

? *Ophioscion woodwardi* FOWLER, Proc. Acad. Nat. Sci. Philadelphia, vol. 89, p. 311, fig., 1937 (Port-au-Prince, Haiti).

Corvina adusta Spix, pl. 70 in Spix and Agassiz (1831), has but X–I, 19 dorsal fin rays and 52 vertical scale rows above the lateral line; the anal rays as shown are II, 7. Obviously Agassiz did not describe the fish figured by Spix, since he gave dorsal rays as X–I, 28 and anal rays II, 9. The most significant character in certain respects as clearly shown in plate 70 is the direction of the scale rows below the lateral line. None are shown parallel with the axis of the body, but the scale rows run obliquely upward and backward to the lateral line and the scale row arising from the rear base of anal fin meets the lateral line just behind a vertical from the rear base of the dorsal fin. The direction of these scale rows strongly suggests that plate 70 in Spix and Agassiz (1831) may be some species of *Plagioscion*, perhaps near *P. pauciradiatus* Steindachner (1917).

The following references list *O. adustus*, but their counts disagree with those for the true *adustus:* Ribeiro, "Fauna Brasiliense Peixes," Arch. Mus. Nac. Rio de Janeiro, vol. 17, family Sciaenidae, p. 23, 1915, and Devincenzi, Ann. Mus. Nac. Montevideo, ser. 2, pt. 5, p. 239, 1924. It must be concluded, therefore, that their descriptions must apply to some other species or that they were erroneously drawn up.

The description by Jenyns fits very well the specimen before me (U.S.N.M. No. 86710), which is 120 mm. in standard length and was collected by Dr. H. M. Smith in Uruguay in 1922.

Berg (Ann. Mus. Nac. Buenos Aires, vol. 4, p. 52, 1895) listed *Sciaena adusta* (Agassiz), but his counts did not agree with those of Agassiz or of my specimen, and they need reexamination to determine the identity of his material.

Ophioscion woodwardi Fowler (*loc. cit.*), described from Haiti in 1937, probably is a synonym of *adustus*. I have not seen Fowler's types, but the number of fin rays places it with *adustus*, and the white area along base of dorsal fins abruptly set off by the blackish area distally along basal part of dorsal fin rays, as in our specimen (U.S.N.M. No. 86710) from Uruguay, indicates that *woodwardi* and *adustus* are the same.

OPHIOSCION BRASILIENSIS, new species

FIGURE 6

Holotype.—U.SN.M. No. 87742, one specimen, 77 mm. in standard length, taken over a sand bar at Santos, Brazil, September 12, 1925, by Dr. Waldo L. Schmitt.

Paratype.—U.S.N.M. No. 122611, one specimen, 89 mm., taken with the type and bearing same data.

Description.—Certain measurements were made, and these data, recorded below, are expressed in hundredths of the standard length, first for the holotype, then for the paratype in parentheses, respectively. Standard lengths in millimeters, 77 (89).

Length of head 33.8 (33.2); greatest depth of body 32.5 (30.8); diameter of eye 7.53 (7.42); length of snout 9.22 (8.76); distance from front of upper lip to rear tip of maxillary 12.2 (11.8); least preorbital width 4.16 (3.93); postorbital length of head 18.8 (18.4); width of bony interorbital space 9.74 (9.10); length of caudal peduncle or distance from base of last anal ray to midcaudal fin base 22.1 (23.6); least depth of caudal peduncle 10.0 (9.55); length of base of second

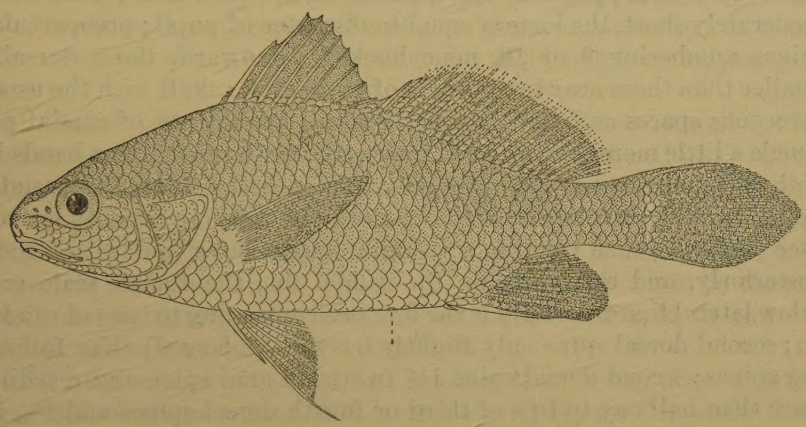

FIGURE 6.—*Ophioscion brasiliensis*, new species: Holotype (U.S.N.M. No. 87742).

dorsal fin 32.5 (31.2) and of base of anal fin 12.5 (12.9); longest dorsal spine 175 (—); length of second dorsal spine 12.3 (11.8); length of second anal spine 16.2 (13.8); longest ray of pectoral fin 24.4 (22.5); longest soft ray of pelvic fin 25.1 (25.8); length of pelvic spine 12.1 (11.7); longest midcaudal fin ray 26.0 (23.0); length of longest gill raker 3.64 (2.81); distance from snout tip to dorsal origin 37.1 (36.5) and to anal origin 68.3 (70.8); snout to pelvic insertion 35.4 (35.5) and to pectoral insertion 34.4 (33.7).

The following counts were made, respectively: Dorsal rays X–I, 22 (X–I, 21); anal rays II, 9 (II, 9); pectoral rays ii, 16–ii, 17 (ii, 17–ii, 17); pelvics always I, 5; vertical scale rows counted above lateral line 46 (46) and pores in lateral line 45 (46); scales from dorsal origin to lateral line 5 (5) and from base of first soft dorsal ray to lateral line 5 (5); scales from lateral line to anal origin 7 (7); zigzag scale rows around caudal peduncle 17 (17).

Snout bluntly rounded, projecting a little in front of the mouth, the latter inferior in position; lower jaw included; interorbital space broad, a little convex, its width about equal to length of snout; an-

terior profile from dorsal origin to between eyes nearly straight, or a very little convex; ventral profile curves to pelvic insertions, then nearly straight backward to anal origin; body compressed posteriorly; greatest depth of body at dorsal origin; eye 4⅘ in head, 1⅖ in interorbital space, and 2⅖ in postorbital length of head; posterior nasal opening close to eye, larger than the anterior one; tip of lower jaw without barbels but with a median pit containing two minute pores lying in this porelike depression, and laterally two pairs of pores as in *panamensis;* pores and lobes on front of snout as described for *panamensis;* anus a little over two-thirds closer to anal origin than to pelvic bases; tip of filament of pelvic soft ray reaching to anus; pectoral fins reaching to opposite anus; gill rakers moderately short, the longest equal to diameter of pupil; preopercular spines numbering 9 or 10, none hooked downward, those dorsally smaller than those near lower angle of preopercle; skull with the usual cavernous spaces as found in other genera; least depth of caudal peduncle a little more than twice in its length; teeth in villiform bands in both jaws, the outer row of upper jaw a little enlarged; pseudobranchiae well developed; scales ctenoid; lateral line broadly curved over pectorals, then running a straight course along midaxis of body posteriorly, and extending on the caudal fin; the fourth scale row below lateral line anteriorly is the first one continuing to base of caudal fin; second dorsal spine only slightly heavier (enlarged) than following spines; second dorsal spine 1¼ in second anal spine and reaching more than halfway to tips of third or fourth dorsal spines and 1⅖ in postorbital length of head; second anal spine moderately enlarged, and not reaching to tips of soft rays; pelvic spine equal to length of second dorsal spine; distal margins of all fins a little rounded, that of caudal fin double truncate, with the middle rays longest.

Color.—In alcohol, pale brownish above, lighter below; anal and spiny dorsal dusky; pelvic soft rays dusky distally, the filamentous ray white; other fins very pale brownish; peritoneum with numerous black pigment cells; the types are not well preserved and the colors have faded.

Remarks.—This new species of *Ophioscion* may be separated from other Atlantic species of this genus by the foregoing key.

Named *brasiliensis* in reference to the country along whose shores the types were collected.

OPHIOSCION MICROPS (Steindachner)

Corvina microps STEINDACHNER. Sitzb. Akad. Wiss. Wien [Ichth. Notizen No. 1], vol. 49, p. 6, pl. 2, fig. 2, 1864 (Guiana).

I have made measurements on two specimens from Pará (M.C.Z. No. 4581), and the results are recorded below in hundredths of the standard length. Standard lengths in millimeters, 66.3 and 60.3.

Length of head 32.1 and 33.2; greatest depth of body 30.2 and 31.5; diameter of eye 6.64 and 6.47; length of snout 9.95 and 8.62; distance from front of upper lip to rear of maxillary 11.3 and 11.9; least preorbital width 4.98 and 4.48; postorbital length of head 18.5 and 19.1; bony interorbital space 10.4 and 11.3; length of caudal peduncle or distance from base of last anal ray to midcaudal fin base 26.8 and 24.9; least depth of caudal peduncle 9.95 and 10.1; length of base of second dorsal fin 33.2 and 35.6; length of anal fin base 12.5 and 12.6; length of longest or third dorsal spine 19.6 and 19.8; length of second dorsal spine 14.0 and 13.4; longest soft anal ray 19.6 and 21.5; length of second anal spine 18.1 and 18.6; longest pectoral ray 21.1 and 25.7; longest soft ray of pelvic fin 23.1 and 23.7; length of pelvic spine 12.4 and 13.3; tip of snout to dorsal origin 36.9 and 38.1; snout to anal origin 65.4 and 66.8; snout to pectoral insertion 32.1 and 33.3; length of longest gill raker 2.71 and 2.65.

The following counts were made: Dorsal rays XI–I, 19, and XI–I, 21; anal rays II, 9 and II, 9; pectoral rays ii, 16–ii, 16 and ii, 17–ii, 16; pelvics always I, 5; gill rakers on first gill arch 11+1+19 and 11+1+18; vertical scale rows above lateral line 51 and 50; scales from dorsal origin to lateral line 5 and 5, and from base of first soft dorsal ray to lateral line 4 and 4; scales from anal origin to lateral line 7 and 8; zigzag scale rows around caudal peduncle 18 and 18. Additional counts are recorded in table 1.

This species has a very small eye, smaller than in any other species. Diameter of eye is contained in young 1½ to 1¾ and in adults 2 to 2¾ times in interorbital space.

OPHIOSCION VENEZUELAE, new species

FIGURE 7

Holotype.—U.S.N.M. No. 121749, one specimen, 139.5 mm. in standard length, collected by Leonard P. Schultz near mouth of Caño de Sagua, 25 km. north of Sinamaica, Venezuela, May 12, 1942.

Paratypes.—U.S.N.M. No. 121750, six specimens, 57 to 150 mm., collected with the holotype and bearing same data.

Description.—Certain measurements were made, and these data, recorded below, are expressed in hundredths of the standard length, first for the holotype and then for the three paratypes in parentheses, respectively. Standard lengths in millimeters, 139.5 (68.8; 150; 139).

Length of head 28.6 (30.5; 32.4; 30.2); greatest depth of body 30.1 (27.0; 31.2; 30.9); diameter of eye 6.24 (7.12; 5.93; 6.11); length of snout 8.74 (8.14; 9.34; 8.63); distance from tip of snout to rear edge of maxillaries 13.1 (12.6; 13.0; 13.2); least width of preorbital 3.65 (3.63; 4.13; 39.5); postorbital length of head 18.0 (15.8; 17.9; 18.5); width of bony interorbital space 9.68 (9.16; 9.66; 10.3); length of caudal pe-

duncle 25.1 (25.1; 24.3; 25.4); least depth of caudal peduncle 10.7 (9.88; 10.9; 10.9); length of base of second dorsal fin 32.6 (32.5; 32.1; 32.4); length of base of anal fin 11.0 (11.6; 11.7; 11.2); length of longest dorsal spine 18.6 (21.1; 18.5; 19.3); length of longest soft dorsal ray — (13.1; —; —; 13.2); longest soft anal ray 16.1 (17.0; —; 14.7); length of second anal spine 16.3 (17.4; — ; 15.8); longest pectoral fin ray 25.2 (23.1; 22.7; 25.2); longest soft pelvic ray 13.0 (18.6; 12.3; 13.9); length of pelvic spine 9.32 (11.5; 8.34; 8.85); longest or middle caudal fin rays 25.9 (26.9; 22.7; 25.5); distance from tip of snout to dorsal origin 37.1 (35.9; 38.5; 37.7); snout to anal origin 67.2 (65.4; 65.1; 66.2); snout to pectoral insertion 32.6 (31.1; 32.2; 31.6); snout to pelvic insertion 32.6 (30.5; 30.6; 30.9); length of longest gill rakers on first gill arch 1.58 (2.76; 1.66; 3.22).

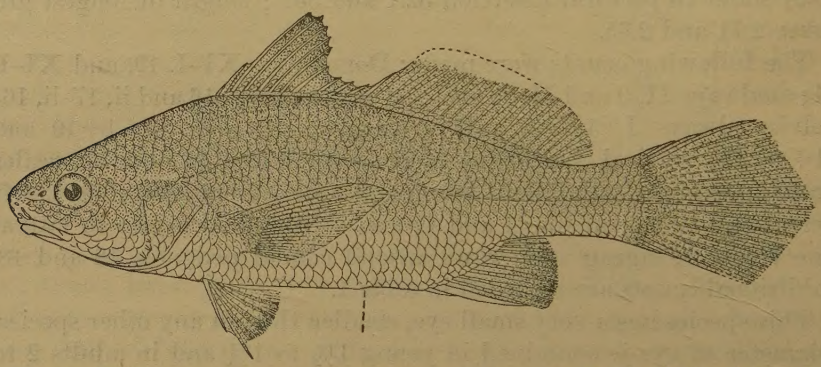

FIGURE 7.—*Ophioscion venezuelae*, new species: Holotype (U.S.N.M. No. 121749).

The following counts were made, respectively: Dorsal rays XI–I, 21 (XI–I, 22; XII–I, 21; XI–I, 21; XI–I, 21; XI–I, 21; XI–I, 22); anal rays on all types II, 8; pectoral rays ii, 17–ii, 17 (ii, 16; ii, 17–ii, 17; ii, 17–ii, 17; ii, 16); pelvics always I, 5; number of vertical scale rows above lateral line 52 (53; 52; 54); scales from dorsal origin to lateral line 6 (—; 6; 6) and from base of first soft dorsal ray to lateral line 6 (—; 6; 6); scales from lateral line to anal origin 8 (—; 8; 8); scales in a zigzag row around the caudal peduncle 19 (—; 19; 19); number of gill rakers on first gill arch 9+1+16 (—; 10+1+18; 10+1+18; 9+1+16; 10+1+16).

Head depressed forward but rounded dorsally, the interorbital space convex, broad, about equal to the snout; body compressed; anterior profile nearly straight but the dorsal contour curved, the ventral contour but slightly curved backward to anus; back highest at base of spiny dorsal fin; eye about 2⅔ in postorbital length of head, 1⅘ in interorbital space; posterior nasal opening rounded, slightly larger than the anterior one; tip of lower jaw without barbels; anal origin equidistant between pelvic insertion and midcaudal fin base; pelvic

fins reaching halfway to anus, the first soft ray ending in a short filament; preopercle with eight or nine short spines, the lowest one strongest but not hooked downward; caudal peduncle least depth 2⅓ in its length; tips of pectoral fins reaching a trifle past anus; teeth in jaws in bands, the outer row of upper jaw a little enlarged; pseudobranchiae well developed; gill rakers short, not quite so long as pupil diameter; scales strongly ctenoid; lateral line curved over pectoral fin, then running a straight course on caudal peduncle along its midaxis; fourth scale row below lateral line, anteriorly, the first one extending to base of caudal fin; first dorsal spine rudimentary, second 2½ in third, the latter nearly as long as the fourth; second and eighth to eleventh and the next spine heavier than the third to seventh spines of dorsal fin; fourth or longest dorsal spine about equal to postorbital length of head; distal margin of spiny dorsal fin truncate or a very little concave, that of soft dorsal probably a trifle rounded (the tips of the soft rays are lacking and this cannot be determined accurately); middle rays of caudal fin longest, edges of lobes more or less truncate to rounded (double truncate); distal margins of anal and pelvic fins a little rounded; pectoral fins somewhat pointed, the fourth branched ray from above longest.

Color.—In alcohol the upper sides and back are grayish brown, white below; dorsal, anal, and pelvic fins dusky, more intensely pigmented distally; soft dorsal and caudal fins dusky; pectoral fin darker than other fins except tip of spiny dorsal; lower jaw and upper lip white; peritoneum white. In the smaller paratypes the dusky upper sides are broken up with several pale blotches, which appear to have a small cyst at their centers.

Remarks.—This new species differs from all other known species of *Ophioscion*, except *O. adustus* and *O. microps*, both from the western Atlantic, in having more numerous gill rakers, 16 to 18 on lower part of first gill arch, but *adustus* has 28 soft dorsal rays and *venezuelae* only 22 to 24. *O. microps* has II, 9 anal rays and *O. venezuelae* II, 8. The key will serve for distinguishing the seven species now recognized in the western Atlantic.

Named *venezuelae* in reference to the country where the specimens were collected.

OPHIOSCION PUNCTATISSIMUS Meek and Hildebrand

Ophioscion punctatissimus Meek and Hildebrand, Marine fishes of Panama, vol. 2, p. 644, pl. 68, 1925 (Cristóbal, Toro Point, and Colon, Panama).

Ophioscion adusta Evermann and Marsh, Fishes of Porto Rico, U. S. Fish Comm. Bull., vol. 20 (1900), pt. 1, p. 219, 1902 (Vieques Island).

I have examined the following specimens in the national collections:

U.S.N.M. Nos. 81766, the holotype, and 50161 and 126188, four specimens from Vieques Island off Puerto Rico.

U.S.N.M. No. 104297, one specimen, from Recife, Pernambuco, Brazil.

U.S.N.M. Nos. 80765 and 80766, two paratypes, from Panama.

OPHIOSCION PANAMENSIS, new species

FIGURE 8

Ophioscion adustus (in part) MEEK and HILDEBRAND, Marine fishes of Panama, vol. 2, p. 639, 1925 (Fox Bay, Colon, Panama).

Holotype.—U.S.N.M. No. 122612, one specimen, 52 mm. in standard length, collected in Fox Bay, Colon, Panama, January 27, 1912, by Meek and Hildebrand.

Paratypes.—U.S.N.M. No. 81204, three specimens, 31.5 to 43 mm. in standard length, from Fox Bay, Colon, Panama, January 5, 1911, Meek and Hildebrand; U.S.N.M. No. 81205, four specimens, 23.3 to 30.5 mm., Fox Bay, Colon, Panama, March 31, 1911, Meek and Hildebrand; U.S.N.M. No. 81207, one specimen, 33 mm., from Porto Bello, Panama, March 17, 1912, Meek and Hildebrand; U.S.N.M. No. 81206, one specimen, 42 mm., collected along with the holotype and bearing same data; U.S.N.M. No. 128260, one specimen, 35.5 mm., from Fort Sherman, Canal Zone, Panama, collected March 3, 1937, by Dr. S. F. Hildebrand.

Description.—Certain measurements were made, and these data, recorded below, are expressed in hundredths of the standard length, first for the holotype, then for a paratype in parentheses. Standard lengths in millimeters 52 (42).

Length of head, 33.3 (34.3); greatest depth of body 32.7 (32.2); diameter of eye 7.30 (7.86); length of snout 9.80 (9.76); distance from front of upper lip to rear tip of maxillary 10.4 (11.4); least preorbital width 4.80 (4.76); postorbital length of head 17.9 (19.0); width of interorbital space 9.62 (10.2); length of caudal peduncle or distance from base of last anal ray to midcaudal fin base 22.3 (23.1); least depth of caudal peduncle 11.2 (10.7); length of base of second dorsal fin 35.4 (35.7) and of base of anal fin 10.6 (11.9); longest dorsal spine 18.3 (16.4); longest soft ray of dorsal fin — (7.2); longest soft ray of anal fin 20.8 (18.6); length of second anal spine 18.8 (19.3); longest ray of pectoral fin 23.1 (22.4); longest soft ray of pelvic 21.7 (25.0) and of pelvic spine 12.1 (12.6); longest midcaudal fin ray 30.0 (31.0); length of longest gill raker 2.11 (2.38); distance from snout tip to dorsal origin 38.3 (39.3) and to anal origin 71.9 (67.4); snout to pelvic insertion 36.0 (35.6) and to pectoral insertion 34.6 (32.9).

The following counts were made, respectively: Dorsal rays X–I, 20 (X–1, 21); anal rays II, 7 (II, 7); pectoral fin rays ii, 17–ii, 17 (ii, 17–ii, 17); pelvics always I, 5; scale rows above lateral line 51 (52) and pores in lateral line to midcaudal fin base 50 (50); scales from dorsal origin

to lateral line 5 (5) and from base of first soft ray of dorsal to lateral line 5 (5); scales from lateral line to anal origin 9 (8); zigzag scale rows around caudal peduncle 19 (17). Additional counts are recorded in table 1.

Snout bluntly rounded, projecting a little in front of mouth, the latter inferior in position, lower jaw included; interorbital space broad, a little convex, its width about equal to length of snout; anterior profile nearly straight from dorsal origin to between eyes or a trifle convex; ventral profile a little convex anteriorly, then nearly straight to anal origin; body compressed posteriorly; greatest depth at dorsal origin; eye about 4½ in the head, 2⅕ in postorbital length of head, and 1¼ in interorbital space; posterior nasal opening close to eye, a

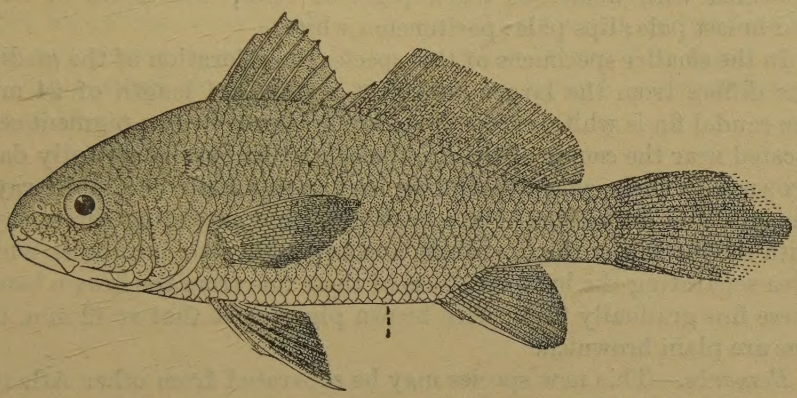

FIGURE 8.—*Ophioscion panamensis*, new species; Holotype (U.S.N.M. 122612).

little larger than anterior one; tip of lower jaw without barbel, but with three pairs of pores, the median pair minute and in a porelike depression; tip of snout with two pairs of lobes, a pore lying between the middle pair of lobes and the outer pair being separated from the median lobes by a pore on each side, a third groovelike pore lying laterally to the outer lobe; then dorsally to the margin of the snout occur a median pore and another pore at each side; anus two-thirds closer to anal origin than to pelvic insertion; pelvic fins not quite reaching to anus; the first soft ray of pelvics ending in a short filament; pectoral fins reaching opposite tip of pelvics; gill rakers short, a little less than one-half the pupil; preopercle with eight or nine small spines, those dorsally smaller than those near the lower angle of preopercle; none hooked downward; skull with the usual open spaces or sinuses between the narrow bony bridges; least depth of caudal peduncle 1⁹⁄₁₀ in its length; teeth in villiform bands in both jaws, the outer row of upper jaw slightly enlarged; pseudobranchiae well developed; scales strongly ctenoid; lateral line broadly curved over pectorals, then running a straight course along midaxis of body posteriorly, extending on

caudal fin; the fifth scale row below lateral line anteriorly is the first one continuous to base of caudal fin; second dorsal spine enlarged, its length 1⅓ in second anal spine, and reaching more than halfway to tip of third or fourth dorsal spine; second dorsal spine 1⅙ in postorbital length of head; second anal spine enlarged, not reaching to tips of soft anal rays; pelvic spine a trifle shorter than second dorsal spine; distal margins of dorsal, anal, and of paired fins a little rounded, that of the caudal fin double truncate, the midcaudal rays longest.

Color.—In alcohol the body is brownish everywhere, paler brown ventrally; paired fins and anal and dorsal fins blackish, with the first spine in these fins, except pectorals, whitish; tip of first soft ray in pelvic fins white, especially the filament; soft dorsal and caudal fins brownish with numerous black pigment cells; undersides of head and breast pale; lips pale; peritoneum white.

In the smaller specimens of this species the coloration of the median fins differs from the larger ones. At a standard length of 24 mm. the caudal fin is white, except for a few scattered brown pigment cells located near the center of the fin, the caudal fin base is abruptly dark brown with the pigment extending backward a little on middle rays; the anal and dorsal fins have a brownish band extending across rays, with the margin of the fins white, and below this bar is another white area separating the brownish base of these fins from the brown band; these fins gradually fill in with brown pigment so that at 42 mm. the fins are plain brownish.

Remarks.—This new species may be separated from other Atlantic species of *Ophioscion* by the key and traces down to *O. adustus* in Meek and Hildebrand's key to the species of *Ophioscion* in their "Marine Fishes of Panama" (vol. 2, p. 636, 1925).

Named *panamensis* in reference to the region where it has been collected.

OPHIOSCION NASO (Jordan)

Stelliferus naso JORDAN, *in* Jordan and Eigenmann, Rep. U. S. Comm. Fish and Fisheries for 1886, vol. 14, p. 395, 1889 (Cachiura, Brazil).

I have made measurements on two of the types (M.C.Z. No. 4583) from Cachiura, and the results are recorded below in hundredths of the standard length. Standard lengths in millimeters, 75.5 and 70.5.

Length of head 31.1 and 30.5; greatest depth of body 31.8 and 28.4; diameter of eye 8.60 and 9.22; length of snout 9.27 and 9.22; tip of premaxillaries to rear of maxillary 10.1 and 9.78; least width of preorbital 3.97 and 3.97; postorbital length of head 15.9 and 15.6; least width of bony interorbital 9.14 and 9.22; length of caudal peduncle (base of last anal ray to midbase of caudal fin) 25.0 and 24.4; least depth of caudal fin 10.6 and 10.8; length of base of second dorsal fin 31.8 and

36.2; length of anal fin base 12.4 and 12.1; length of longest dorsal or third spine 22.3 and 21.0; longest soft dorsal ray 17.2 and —; length of second dorsal spine 10.6 and 11.3; longest soft ray of anal fin 19.9 and 17.9; length of second anal spine 17.0 and 16.5; longest ray of pectoral fin 25.2 and —; longest soft ray of pelvic fins 21.2 and 21.3; length of pelvic spine 12.6 and 12.3; longest or middle rays of caudal fin 28.2 and 28.4; tip of snout to dorsal origin 38.3 and 37.2; snout to anal origin 66.2 and 68.8; snout to pectoral insertion 31.8 and 31.9; longest gill raker 1.99 and 1.99.

The following counts were made, respectively: Dorsal rays XI–I, 21 and XI–I, 21; anal rays II, 8 and II, 8; pectoral rays ii, 16–ii, 16 and ii, 16–ii, 16; pelvics always I, 5; gill rakers on first gill arch 8+1+14 and 8+1+14; vertical scale rows above lateral line 46 and 46; scales above lateral line at origin of spiny dorsal fin 4 and 4, and at base of first soft dorsal ray 5 and 5; scales below lateral line from anal origin to lateral line 8 and 8; zigzag scales around caudal peduncle 18 and 18.

U. S. GOVERNMENT PRINTING OFFICE: 1945